

539,518  
(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
1 July 2004 (01.07.2004)

PCT

(10) International Publication Number  
**WO 2004/055063 A1**

(51) International Patent Classification<sup>7</sup>: C08F 4/64, 10/00

(21) International Application Number:  
PCT/GB2003/005208

(22) International Filing Date: 3 December 2003 (03.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
02358029.3 17 December 2002 (17.12.2002) EP

(71) Applicant (for all designated States except US): BP  
CHEMICALS LIMITED [GB/GB]; Britannic House, 1  
Finsbury Circus, London EC2M 7BA (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): JACOBSEN, Grant,  
Berent [GB/FR]; 343 Chemin du Petit Nice, F-13320  
Bouc-Bel-Air (FR). KIMBERLEY, Brian, Stephen  
[GB/FR]; 1116, rue Camille Saint Saens, F-13320  
Bouc-Bel-Air (FR). LALANNE-MAGNE, Claudine, Vi-  
viane [FR/FR]; 32 bis, boulevard Pablo Neruda, F-13920  
Saint Mitre Les Remparts (FR). MASTROIANNI, Sergio  
[FR/FR]; 33, Avenue des Esperelles, Appartement 203,  
F-13500 Martigues (FR).

(74) Agent: HAWKINS, David, George; BP International  
Limited, Patents & Agreements, Chertsey Road, Sun-  
bury-on-Thames, Middlesex TW16 7LN (GB).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,

KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,  
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted  
a patent (Rule 4.17(ii)) for the following designations AE,  
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,  
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES,  
FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,  
MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,  
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT,  
TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent  
(BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ,  
TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK,  
EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the  
earlier application (Rule 4.17(iii)) for all designations
- of inventorship (Rule 4.17(iv)) for US only

**Published:**

- with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: SUPPORTED OLEFIN POLYMERIZATION CATALYST

(57) Abstract: Supported catalyst systems are provided comprising (a) a transition metal compound, (b) a non aluminoxane activator comprising, and (c) a support material comprising an inorganic metal oxide, inorganic metal halide or polymeric material or mixtures thereof characterised in that the support material has been pretreated with an SO<sub>4</sub> containing compound. The preferred transition metal compounds are metallocenes and the SO<sub>4</sub> containing compound is typically sulphuric acid. The supported catalyst systems show improved activity and also may reduce fouling in gas phase fluidised bed processes.

WO 2004/055063 A1